

CLAIMS

What is claimed is:

1. An ablation catheter for treating tissue, the ablation catheter comprising
a porous conductor adapted to deliver therapeutic energy; and
a catheter shaft having a proximal portion and a distal portion, wherein said distal portion
comprises
at least one lumen adapted to carry wires, optical fibers, and fluids for a variety of
functional purposes, wherein said porous conductor is attached within said
at least one lumen; and
an active region, wherein said active region is adapted to introduce the therapeutic
energy from said porous conductor to the tissue.
2. The ablation catheter of claim 1, wherein said catheter shaft is constructed from a
polymer, and wherein said porous conductor is constructed from metal mesh.
3. The ablation catheter of claim 1, wherein said active region includes a plurality of
portholes, wherein said at least one lumen comprises at least a first lumen, wherein said first
lumen is adapted to carry a conductive fluid medium from said proximal portion to said plurality
of portholes along said active region, wherein said porous conductor is attached within said at
least one lumen over said plurality of portholes, and wherein said porous conductor is adapted to
supply the therapeutic energy to the tissue through said conductive fluid medium.
4. The ablation catheter of claim 3, wherein said distal portion has an outer peripheral
wall, wherein said active region has a longitudinal axis, and wherein said plurality of portholes
are arranged along a porthole centerline extending along said outer peripheral wall parallel to
said longitudinal axis of said active region.
5. The ablation catheter of claim 3, wherein said at least one lumen further comprises a
second lumen, and wherein a shape retention wire is mounted in said second lumen.

6. The ablation catheter of claim 5, wherein said shape retention wire is a Nitinol wire.
7. The ablation catheter of claim 3, wherein said at least one lumen further comprises a second lumen, and wherein super elastic wire is mounted in said second lumen.
8. The ablation catheter of claim 1, wherein said porous conductor is a metal mesh electrode.
9. The ablation catheter of claim 1, wherein said catheter shaft has a cross-sectional configuration that includes at least one thickened areas.
10. The ablation catheter of claim 1, wherein said distal portion has a cross-sectional configuration that includes a flattened outer peripheral wall.
11. An ablation catheter for treating tissue, the ablation catheter comprising a catheter shaft, said catheter shaft comprising
 - a proximal portion;
 - a distal portion, said distal portion being adapted to be inserted into a body cavity having tissue to be ablated, and said distal portion comprising an active region including at least one porthole; and
 - a first lumen extend from said proximal portion to said distal portion, said first lumen being adapted to carry a conductive fluid medium from said proximal portion to said at least one porthole along said active region of said distal portion; anda mesh electrode mounted within said first lumen over said at least one porthole and extending along said active region of said distal portion, wherein said mesh electrode is adapted to supply ablation energy through the conductive fluid medium.
12. The ablation catheter of claim 11, wherein said distal portion is straight.
13. The ablation catheter of claim 11, wherein said distal portion is curved.

14. The ablation catheter of claim 13, wherein said distal portion comprises a first curved section, a second curved section, and a third curved section, and wherein said third curved section defines said active region.

15. The ablation catheter of claim 14, wherein said at least one porthole comprises a plurality of portholes arranged along a porthole centerline, and wherein said distal portion has an outer peripheral wall, and wherein said active region is along a radial apex of said outer peripheral wall, along said porthole centerline.

16. The ablation catheter of claim 13, wherein said catheter shaft is a braided shaft.

17. An ablation catheter for ablating tissue, the ablation catheter comprising
a catheter shaft, said catheter shaft comprising
a proximal portion;
a distal portion comprising at least one curved section adapted to be inserted into
a body cavity having tissue to be ablated, wherein said at least one curved
section defines an inner peripheral wall and an outer peripheral wall, and
wherein said outer peripheral wall has an active region that includes a
plurality of portholes;
a first lumen extending from said proximal portion to said distal portion, said first
lumen being adapted to carry a conductive fluid medium from said
proximal portion to said portholes along said active region of said distal
portion; and
a second lumen extending adjacent to said inner peripheral wall;
a mesh electrode mounted within said first lumen over said plurality of portholes and
extending along said active region of said distal portion, wherein said mesh electrode is adapted
to supply ablation energy through the conductive fluid medium; and
a shape retention wire mounted in said second lumen.

18. The ablation catheter of any one of claims 1, 11, and 17, wherein said distal portion has a cross-sectional configuration along said active region, and wherein said cross-sectional configuration is adapted to bias said active region against the tissue.

19. The ablation catheter of claim 18, wherein said cross-sectional configuration along said active region is a polygonal configuration having a flattened outer peripheral wall.

20. The ablation catheter of claim 19, wherein said polygonal configuration is selected from the group consisting of a D-shaped configuration, a triangular configuration, and a rectangular configuration.